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## The new forest code impact on payment for environmental services<sup>1</sup> schemes in Brazil

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**Abstract** The last two years have been of passionate discussions over the changes on the new forest code bill, the legislation that regulates environmental conservation standards for private lands in Brazil. The forest code in place was sanctioned in 1965 and since then it did suffer many changes, but none of the subsequent changes was able to push the forest code towards its implementation. Since 2006, NGOs have been partnering local and state governments, rural producers and its unions to implement the forest code. A methodology have been developed, the *cadastro ambiental rural*<sup>2</sup>, to diagnose assets and liabilities in terms of natural forest cover in each rural property and proposes paths for compliance. While this trend has been pushed in the Amazon by the command and control actions developed by the Brazilian Federal Government and the credit restriction to deforesting municipalities, in other biomes like the Atlantic Forests payment for environmental services (PES) schemes have been paramount for the adoption of compliance with the forest code. The new bill incorporates some of the lessons learned and may open a broader perspective for PES adoption and natural forests restoration. An analysis of forest code implementation in the Amazon and PES initiatives in Atlantic Forests shows the important roles both strategies have for stopping illegal deforestation in the Amazon and restoring Atlantic Forests and how these two strategies may be integrate as the new bill is sanctioned and enforced.

**Key words** tropical forest conservation; forest code; amazon; atlantic forests; deforestation; environmental services

### THE NEW FOREST CODE IMPACT ON PAYMENT FOR ENVIRONMENTAL SERVICES SCHEMES IN BRAZIL

#### 1. The history of the forest legislation and limits to private ownership of land in Brazil: the role of forests for the provision of environmental services.

“Since the eighteen century, the Brazilian society has been discussing the functions performed by natural ecosystems beyond timber production. The relations between nature and the water cycle conservation, deforestation and erosion/siltation of rivers where empirically clear long before biology and ecology could provide scientific evidence”<sup>3</sup> (do Valle *et al.*, 2011).

The first bourgeois land property rights and land use law in independent Brazil was the land law, from 1850. It completes the transition from the colonial administered Portuguese Crown's grants system established by the law of sesmarias, which was suspended by the new squatters' regime (*regime de posses*, signed by Dom Pedro I). The land law established that acquisition of land property was defined by a money purchase, either from the State or from a previous private owner and prioritized property rights over squatter rights, giving birth to the chains of ownership in rural Brazil (Wolford, 2010). It was the first of a series of legal instruments that both regulate and limit property rights over land in Brazil.

The first forest code was established by the Federal Decree 23.793/34. The first article of the forest code from 1934 declares that the “existing forests in the national territory (...) are goods of

<sup>1</sup> There are many definitions to ecosystem services and environmental services; I opted to use the environmental services terminology for two reasons, (i) it encompasses both the services provided by natural ecosystems to humans as well as the provided by ecosystems actively managed by humans and (ii) it is the terminology used in the new forest code bill (Muradian *et al.* 2010; Brazil, 2011).

<sup>2</sup> *Cadastro ambiental rural* is a rural property registry system. The system runs on a geographic information system database and makes feasible to analyze forest cover at property level, as well as the compliance to environmental legislation requirements.

<sup>3</sup> Translation by the author.

common interest to all inhabitants of the country, property rights are to be exercised with the limitations that general laws, and specially this Code, imposes” (Brazil, 1934).<sup>4</sup>

The original forest code recognizes the value of forests, in its article 4, for the purposes of “protection of water and soil, dune fixation, frontier defense assistance, public health, scenic beauty, and natural refuge for rare indigenous fauna specimens” (Brazil, 1934)<sup>5</sup>. It also establishes, in its article 11, that private lands may be declared of protective utility, therefore having to comply with conservation conditions, including restoration and limits for extension, opportunity and intensity of its forest resources exploration (Brazil, 1934).

It predicts that landowners may be compensated for the proven income losses arising from this special condition (Brazil, 1934). It is similar to a PES scheme where the service valuation is determined through an opportunity cost methodology.

The 1934 forest code was not successful due to state and local authorities’ negligence, if not deliberated passive resistance (Ahrens, 2003; do Valle *et al.*, 2011). Difficulties experienced for the implementation of the 1934 Forest Code led to proposition of a new law to protect the forest assets of Brazil. Presented to the National Congress in 1950, it has incorporated conservation practices considered modern for the fifties. It was finally sanctioned in 1965, as the law number 4.771/1965, known by that time as the “new” forest code<sup>6</sup> (Ahrens, 2003).

The first article of the 1965 Forest Code creates a specific jurisdictional regime for forests and other forms of vegetation. The *caput* of the first article of the 4.771/65 law reads:

“Article 1: The forests in the national territory and other forms of vegetation, are recognized for its utility to the lands they surround, and thus considered goods of common interest to all inhabitants of the country, property rights are to be practiced with the limitations that the law in general and especially this Act establish (Brazil, 1965).”<sup>7</sup>

Silva considers that “goods of common interest to all inhabitants of the country” are in his own words “goods of public interest subject to special jurisdictional regime”. This special jurisdictional regime characterized by the common interest shall not to be confused with common domain. Even though the domain may be private, any individual inhabitant has the legal right, ensured by this law, to demand, either by administrative or judicial means, that the owner of the domain over the forest and other forms of vegetation, conserve good environmental conditions for the vegetation to play their protective role (Silva, 1998).

Neither the 1934 nor the 1965 versions of the forest code mention ecosystem services nor environmental services explicitly, but the 1934 text predicts the possibility of compensation for the maintenance of natural vegetation and both laws do establish that forests are “goods of common interest to all inhabitants of the country”.

The 1965 forest code establishes special objects of conservation within privately owned land in opposition to the vague possibility of declaring a forested area as a protection site by the 1934 text. The permanent preservation areas (PPA) are the forests and other forms of natural vegetation covering riversides, water reservoirs sides, river springs sides, mountaintops, hills, mountains, mountain ranges, sandbanks, dune gripping, mangroves, plateau sides and above one thousand eight hundred meters of altitude. It also established various limitations for deforestation within private properties like the baseline of 20% to be conserved with natural vegetation at all properties within the *Cerrado* (Brazilian central savannas).

Revisions to the text were applied by the law nº 7.803/89 and the provisory measures nºs 2.166-67/2001, enlarged the PPAs sizes and established the legal reserve (LR), a minimum percentage of natural vegetation to be conserved at property level, of 80% in the Amazon, 35% in

<sup>4</sup> Translation by the author.

<sup>5</sup> Translation by the author.

<sup>6</sup> The Law 4.771/1965 was referred as the new forest code when it was sanctioned in 1965. In the further references it will be named the forest code, as a result the new forest code will be used to refer to the bill 1.876/1999.

<sup>7</sup> Translation by the author.

the *Cerrado* areas within the Legal Amazon, and 20% for the Atlantic Forests and other forms of vegetation, including natural grasslands throughout the country.

## 2. From early enforcement to the development of comprehensive national legislation: the forest code implementation in the Amazon.

The new forest code bill still has to be passed in a second round in the House of Representatives and may be vetoed either by the House or the President. It is not the objective of this article to discuss the possibilities of one or another scenario. Instead, I will focus on the instruments that may induce environmental regularization as well as restoration of environmental services included in text approved in the Senate.

Since the beginning of twenty thousands, NGOs have begun partnering local and state governments, rural producers and its unions to implement the forest code. The first municipal wide initiative of this kind took place in the municipality of Lucas do Rio Verde, through a broad partnership between the mayor's office<sup>8</sup>, the Rural Union of Lucas do Rio Verde, the Public Prosecutor's Office<sup>9</sup>, the Mato Grosso State Environment Secretariat<sup>10</sup> and The Nature Conservancy<sup>11</sup> (TNC), with the financial support of private sector companies interested in the supply of environmentally compliant agricultural commodities (TNC, 2011).

A methodology known as *cadastral ambiental rural* (CAR) was applied on the field for spatial mapping of all rural properties using geographic information systems (GIS). A software known as Cargeo<sup>12</sup> was created for automatized analysis of individual properties, allowing fast diagnostic of forest assets and liabilities based on the forest code requirements. Regarding the compliance with the forest code, the diagnosis showed that a little more than 10% of the natural vegetation which should be preserved was in fact illegally deforested, requiring the development of strategy for forest restoration and compensation on other areas (TNC, 2011).

While the first pilot initiative of forest code compliance was being developed on the ground, the Federal Government was increasing actions to reduce deforestation rates in the Amazon, which have topped at 27.772 sq. kilometers in 2003-2004 (PRODES-INPE, 2011).

The Federal Decree from July 3<sup>rd</sup>, 2003<sup>13</sup> established the Permanent Interministerial Working Group to propose measures and coordinate actions aimed at reducing rates of deforestation in the Brazilian biomes, through the elaboration of action plans for prevention and control of deforestation (Brazil, 2003). The first action plan developed by the Working Group was the Action Plan for the Prevention and Control of the Deforestation in the Amazon (PPCDAM) released in 2004. It was developed under three operational components: (i) territorial and land tenure planning, (ii) monitoring and control, (iii) promotion of sustainable economic activities (Brazil, 2004). The monitoring and control component was by far the one that was implemented to a greater extension. As a result, most of the reduction in deforestation rates in the Amazon observed since 2004 was attributed to the increase of command and control actions. The first independent evaluation of the PPCDAM<sup>14</sup> for the period between 2004 and 2007 endorses this general

<sup>8</sup> General information on the Lucas do Rio Verde mayor's office is available at <http://www.lucasdorioverde.mt.gov.br/>.

<sup>9</sup> General information on the Mato Grosso State Public Prosecutor's office is available at: <http://www.mp.mt.gov.br/>.

<sup>10</sup> General information on the Mato Grosso State Secretariat is available at <http://www.sema.mt.gov.br/>.

<sup>11</sup> General information on The Nature Conservancy in Brazil is available at <http://portugues.tnc.org/>.

<sup>12</sup> Cargeo was developed by TNC and Arcplan, a private company specialized in the development of systems and geographic and environmental studies and analysis. Cargeo was originally named Agrogeo but it was rebranded due to copyrights over the former name.

<sup>13</sup> The Federal Decree from July 3<sup>rd</sup>, 2003 is unnumbered.

<sup>14</sup> Conducted by an independent consultant hired by the Ministry of Environment in partnership with the *Deutsche Gesellschaft für Technische Zusammenarbeit* (GTZ). Available at <http://www.ipam.org.br/download/livro/Plano-de-Acao-para-Prevencao-e-Controle-do-Desmatamento-na-Amazonia-Legal-PPCDAM/115>.

perception. The component (ii) monitoring and control was evaluated as the only one with “good performance” (Abdala, 2008).

Among the command and control measures taken by the Federal Government, the Federal Decree no 6.321/2007 was sanctioned to establish a ranking list consisting of municipalities with highest deforestation rates in the Amazon Biome and the normative resolution nº 3545/2008 by the National Monetary Council (CMN) established that banks could only provision rural credit support from any source of funds for agricultural activities in the municipalities that comprise the Amazon Biome for lenders who present a series of documental proof of compliance with the legislation. In addition to the restriction of credit, the Federal Decrees nº 6.514/2008 and 6.686/2008, regulating the Environmental Crimes Law were sanctioned (Brazil 2008).

Despite the contribution of these instruments to the control of deforesting rates in the Amazon, they generated a strong reaction by the National Confederation of Agriculture (NCA). The NCA started to push the bill of the new forest code. By August, 2009, a special commission was established in the House, aiming to fast-track the procedural path for the bill. By October, 2009, Congressman Aldo Rebelo was designated to report the bill on this special commission, a task we would complete by April, 2011, infringing government its largest legislative defeat under President Dilma's leadership (dos Deputados, 2011).

The success of the *Lucas do Rio Verde legal* case established a model for partnerships leading to rural producers' compliance with the forest code at local level. The methods and technology were incorporated into State and Federal governments as other municipalities and rural unions looked after NGOs to replicate the model. Paragominas, in the state of Pará was one the first to lead a similar initiative advancing rapidly. In a couple of years, the former champion of deforestation, also known as *Parago-balas* (Parago-bullets) due to its reputation as a hotspot of violence coming out of land grabbing, turned to be considered a model for sustainability.

To enhance environmental compliance at ground level, the Federal Government sanctioned the Federal Decree no 7.029/2009 establishing the Federal Program for the Environmental Adequacy of Rural Properties, also known as “*Mais Ambiente*” (Brazil 2009). NGOs partnered a series of municipalities in Mato Grosso and Pará States and advanced the implementation of the forest code in the Amazon.

As a result, the deforestation in the Amazon reached an estimated record low of 6.238 sq. kilometers for the period 2010-2011. The consolidated data for the period is to be released by the National Institute for Space Research (INPE) by April, 2012 (PRODES-INPE, 2011).

### **3. Payment for Environmental Services in the Atlantic Forests: a restoration perspective.**

The forest code implementation in the Atlantic Forest has a completely diverse perspective from that on the Amazon region. While in the Amazon it is possible to reduce deforestation rates therefore protecting the integrity of vast areas of native vegetation, in the Atlantic Forests the few natural cover left is disperse and unconnected. Only 22% of the original area is covered with reminiscent natural vegetation (IBAMA, 2010), the preserved fragments bigger than 3 hectares add to just 11% of the original cover (SOS Mata Atlântica & INPE, 20011).

Beyond its importance for biodiversity and carbon storage, Atlantic Forests provide environmental services which are vital to more than one hundred twenty million Brazilians which inhabit its domains (Guedes & Seehusen, 2011). In this context of scarcity of environmental resources and abundant population, it is logical that PES schemes arise as a promisor instruments for successful environmental management in an environment of greater willingness to pay. Although the Payment for Environmental Services bill (nº 792/2007) still have some ground in its procedural path in the House, the new forest code bill article 42, may speed up the process.

Article 42, section I, specifies as one of the lines of action for the program of incentives for environmental preservation and restoration, the

“Payment or incentive for environmental services as retribution, monetary or not, to the conservation activities and improvement of ecosystems which generate environmental services, such as, isolated or cumulatively:

- (a) the sequestration, conservation, maintenance and the increase of stocks and decrease of fluxes of carbon;
- (b) the conservation of natural scenic beauty;
- (c) the conservation of biodiversity;
- (d) the conservation of waters and hydric services;
- (e) the climate regulation;
- (f) the cultural and ecosystem traditional knowledge valorization;
- (g) the conservation and improvement of soil;
- (h) the maintenance of PPAs, LRs and restricted use areas (RUA)<sup>15</sup>;” (Brazil 2011).

Even without a regulatory framework for PES schemes in Brazil, a survey commissioned by the Ministry of Environment identified 33 projects in the Atlantic Forest making use of carbon markets and other 40 projects related the protection of water resources encompassing an area of approximately 40 million hectares in watersheds which provide water for almost 38 million people (Guedes & Seehusen, 2011).

Estimates are not accurate as the methodology used by each of the projects is different, what highlights the need of a single methodology of analysis for the entire country. The new bill establishes CAR to be adopted nationally, harmonizing the methodology used. CAR could be adopted as the standard information source for project registering and monitoring, a comprehensive layer of information which allows monitoring at property level and the inclusion of other layers of data, in a database environment robust enough for broad scale landscape applications, from cattle and wood production tracking to carbon accounting in REDD+ initiatives.

#### 4. The new bill and the potential outcomes of compliance.

The new forest code bill text approved in the Senate is a big improvement from the text that left the House of Representatives a year ago. It not only reduces environmental losses as well as it restricts the benefits for non-compliant farmers, conditioning benefits to the adherence to the regularization program. The bill incorporates into law what was before determined by multiple Federal Decrees, including most of the lessons from the *Mais Ambiente* Program and establishes that all Brazilian States have to develop their own Programs for Environmental Regularization (PRA) and get farms registered with CAR.

It does pardon the illegal deforestation committed before July 22<sup>nd</sup>, 2008 if the farmer joins the PRA but as long as this amnesty is not extended nor re-applied in the future as usually done by the tax recover acts, it may be a great opportunity to bring rural producers into a new paradigm where production and conservation do not stand in opposite sides.

As the experience of Lucas do Rio Verde is being replicated in approximately 50 municipalities, and PES schemes in the Atlantic Forest are also in expansion, farmers may become allies for conservation, as it provides environmental services not only for city inhabitants but specially for the farmers who depends on water, soil and climate integrity.

The lack of robust cartographic databases and information property level within the country makes it hard to estimate the reduction of PPAs and LRs to be restored due to the amnesties offered by the new bill. Even though it is impossible to calculate these numbers with great precision, the Ministry of Environment generated some rough estimates that indicate Brazil has today 103 million hectares of PPAs. 59 million of those are covered by natural vegetation, what leads to a deficit of 44 million hectares that could be restored. It also estimates that LRs adds to 258.2 million hectares, and a deficit of 43 million hectares to be restored. On a conservative analysis, the Ministry estimates that even with the reduction on restoration obligations present in the new bill, a minimum of 33.18 million hectares are to be restored between PPAs and LRs.

While the reduction on compulsory restoration areas is enormous, in the order of 62% smaller

<sup>15</sup> Restricted Use Areas are established by the new forest code bill as an intermediate between areas to be protected under PPA status and areas liberated for agricultural use.

than what should be restored by the actual law, it is big enough to develop an entire industry for natural restoration, without precedent in Brazil. The compliance with the new forest code would require not only unprecedented investments in restoration, but also specialized personnel and the development of forestry supply chains with native species, at scale, opening a window of opportunity for nature to be a great driver for employment, income and sustainable development.

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